THE TRANSFER PROBLEM: THE RELATION OF THE FEDERAL TAX STRUCTURE TO THE PUBLIC DEBT STRUCTURE IN 1945

BY

DONALD CALVIN MILLER

A.B., University of Illinois, 1942
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AN ABSTRACT OF A THESIS

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Among the results of the second World War have been not only a tremendous increase in the size of the public debt of the federal government but also a renewed interest in the possible burden and economic implications of this debt. The possible effects of the debt upon our economy have been the subject of much debate between individuals who hold the traditional views calling for a balanced budget and a reduction of the national debt and those who adhere to the "new philosophy of the public debt". The participants in this debate would probably agree that, if the debt in question were held externally, it would constitute a burden to the economy of the United States, but the controversy is based on an internally-held public debt—one in connection with which the taxpayers and bondholders are both members of the same economy. In this situation the taxes which are paid for the purpose of carrying the interest charges on the debt and the receipt of these interest payments by those holding the debt both affect individuals in the same economy. The discussion concerns the effect of the debt in such a situation upon both individuals and the economy as a whole.

The problem concerns the effect upon these individuals and upon the economy of the flow of funds into the Treasury from the payment of federal taxes and the exit of a portion of these funds for the payment of interest charges to the holders of government securities. Thus, due to the existence of the public debt, there is an exchange of money income among the different income groups in the economy. This is the transfer problem.

The transfer problem has great significance to those involved in the dispute over the economic implications of a

large public debt. It is important to know if the collection of taxes to service the bonds and the interest payments on these bonds results merely in a pocket to pocket transfer on the part of the same individuals or if this transfer is from the pockets of one group to those of another group, for the thesis that an internally-held debt involves no burden is based in part on the supposition of an identity between the taxpayer and the bondholder.

Many of the attempts to determine the burden of the public debt center around the effects of the debt upon the flow of national income. One of the ways in which a part of the effect of the public debt on the flow of income can be estimated is by an analysis of the transfer problem. This study attempts to estimate the deflationary or inflationary influence of the public debt on the flow of income in one particular year. The analysis of the transfer problem depends on an examination of the debt after it has been incurred, and the income-creating possibilities of deficit financing in general are not examined.

The existence of the debt results in the so-called transfer problem, and the process of transferring money income among various income groups in turn impinges on the flow of national income. The emphasis may be upon the effect of such a transfer upon investment and the national income of the nation, or it may be upon the effect of the transfer upon consumption and national income. In either case there are two questions that must be answered. Who pays the taxes? Who owns the bonds? Of more importance perhaps than the latter question is the problem of determining who receives the interest payments on these bonds.

The answers to these questions are necessary in order to determine the redistributive effects of the debt upon national income and the effects in turn upon the flow of income. In order to answer these questions and discover these effects, a comparison must be made of the progressivity of the federal tax structure relative to the public debt structure. The procedure followed in this analysis of the transfer problem was

first to construct a federal tax structure and then a public debt structure for the calendar year 1945. This was the most recent year for which data concerning the distribution of taxation and the holding of the debt by money income groups could be obtained.

One side of the problem then is to estimate the distribution of federal taxes among money income groups in 1945. The results obtained from this procedure depend to a large extent upon the assumptions which are made as to the shifting and incidence of the various taxes under consideration, and the literature of public finance abounds with discussion and conjecture as to the incidence of various taxes and the methods by which they are shifted. Some of the criticism of the position of orthodox public finance writers is noted and is used as the basis for a modification of the traditional views in some instances.

The individual income tax is viewed as a general tax and as a tax which the individual finds it difficult to escape by effecting a price change so as to shift the burden. The assumption is made that no shifting of this tax occurs, and the tax is placed upon the various income brackets in accordance with data obtained from United States Treasury *Statistics of Income.* Some adjustment of these data was necessary, however, in order to obtain comparability with other material used in the analysis. The analysis attempts to allocate taxes paid by consumer units—families and single persons—among money income groups. The allocation of the tax liability resulting from the individual income tax was such that almost 54 percent of the total in this tax category was placed on the upper income classes—those above the $5,000 level.

Although there is somewhat general agreement among economists that the individual income tax is not shifted, there is not the same general agreement concerning the incidence of corporation taxes. The traditional theory of shifting and incidence emphasizes the crucial role played by the marginal

firm. Thus a tax on net profits could have no direct effect on prices or wages because the output of the marginal firm would not be affected by the tax. In a competitive situation prices are seen as determined by market forces which in their action on the marginal firm are not affected by a tax on net profits. Some of the criticisms of these orthodox views are examined, and recognition is given to the possibility of shifting a part of corporate taxes forward to the consumer. Corporate taxes are allocated first on the assumption that no shifting occurs, and that the stockholder bears the burden of taxation. An alternative assumption is made that one-third of all corporate taxes are shifted forward to the consumers of the corporations' products, with the remainder of the taxes falling on the stockholders.

The allocation of corporate taxes to stockholders was made on the basis of estimates of dividends received in 1945 by the various money income groups. Again *Statistics of Income* tabulations furnished the basic source of material for this estimation. For the years 1944 and 1945, however, the individual income tax forms did not provide for the separate tabulation of dividends, and for these two years the tabulations show dividends and interest combined. For this reason it was necessary to estimate the 1945 distribution of dividends partially on the basis of 1943 *Statistics of Income* tabulations. Adjustments were necessary for under-reporting and non-reporting and also for the fact that part of the dividends paid out by corporations were not covered by the *Statistics of Income* data. The results of this process of estimation placed 80 percent of all dividends in the income class of $5,000 and over.

The 1945 corporate tax liability of some 10.8 billion dollars, when allocated on the assumption that no shifting of corporate taxes occurred, was placed among money income groups so that some 8.6 billions or 80 percent of the total fell upon the upper income classes receiving $5,000 or more income in 1945. Under the alternative assumption that one-third of total cor-

porate taxes were shifted forward to consumers, the upper income classes were estimated to bear only 6.5 billion dollars or roughly 61 percent of all corporate taxes. Thus a much more progressive tax pattern resulted under the first assumption, but even under the alternative assumption more than half of corporate taxes were paid by the income groups receiving more than $5,000.

Another category of taxation that is considered as a part of the federal tax structure is Social Security taxation. In effect these taxes are a part of the federal tax structure, since they flow into the Treasury as general revenue in much the same manner as other taxes. The establishment of the trust funds results in a claim against the future revenue of the government, but their present creation involves merely a paper transaction.

Again the problem is faced of determining the incidence of these taxes. There seems to be some agreement as to the incidence of the one percent tax which is paid by the employee, and this tax is allocated on the assumption that it falls on the employee and is not shifted. The determination of the incidence of the employer taxes of one percent for old-age and survivors insurance and three percent for unemployment insurance is a much more difficult and complicated problem. A case can be made for three possibilities in connection with the shifting of the Social Security taxes, and the extent of such shifting may depend upon the relative elasticities of the various factors of production that are involved. From one industry to another it is probable that the incidence of the payroll taxes paid by the employer will vary. Thus the following assumption as to the incidence of these taxes was made: one-third of the total employers' contributions was allocated on the basis of consumer expenditure, one-third on the basis of wages received, and one-third on the basis of dividends, interest, and business profits received in 1945.

The allocation of the employee taxes among money income groups was based on studies made by the Social Security

Board showing contributions by employees by income classes for 1941 and for a hypothetical year with given levels of employment and income. These data were adjusted by using Bureau of the Census published and unpublished data for 1945 on the distribution of money income, average money income, and the amount of such income received from money wages or salaries. The result of this estimate was that 40 percent of the employee contributions were allocated to the income groups of $5,000 and above.

The one-third of the employers' tax which was assumed to be shifted to the laborers was allocated among money income groups in the same manner as the employee tax. The portion of the tax assumed to be shifted forward to the consumer was allocated on the basis of total consumer expenditure. The remaining third which was assumed not to be shifted was allocated to income groups on the basis of the receipt of dividends, interest, and business profits as reported on taxable individual income tax returns for 1945. As a result some 41 percent of employer contributions were allocated to the upper income groups. Similarly, approximately 41 percent, or 1.4 billion dollars, of all Social Security taxes were allocated to the income classes above $5,000.

The variety of taxes which fall under the heading of excise taxes makes it necessary to point out that generalized assumptions as to the incidence of these taxes are subject to some limitations. The possibility exists of shifting these taxes forward or backward with the extent dependent upon the elasticities of the productive factors involved. With most of the taxed items, however, the supply is elastic relative to demand, and the assumption is made that these levies are shifted to the consumers of the product.

The problem of allocating excise taxes among money income groups on the basis of consumer expenditure is difficult for a year such as 1945 for which no studies of the consumer expenditure pattern are available. If the propensity to consume exhibited by the various income groups may be

regarded as a stable function from year to year, the problem of determining consumer expenditures for any given year is not difficult. An examination is made of the consumption functions for various years, and changes occurring in the war period are noted. Since survey data were lacking for 1945, an estimate of the expenditure pattern was made by using Bureau of Labor Statistics data obtained from surveys conducted for 1941 and for 1944—the latter year included only urban consumer units, however. This estimate was adjusted by using Bureau of the Census data showing the distribution of consumer units and income in 1945. The expenditure pattern obtained attributed only 22 percent of total consumer expenditure to the upper income classes, with the $2,000 to $3,000 income group accounting for 26 percent of the total. This expenditure pattern was used as a basis for distributing all excise taxes that were allocated on the basis of total rather than specific consumer expenditure. One-third of corporate taxes shifted to consumers under the alternative assumption and one-third of the employers' payroll taxes were also allocated on this basis.

Certain excises were allocated on the basis of specific expenditure items. The 1941 and 1944 Bureau of Labor Statistics surveys provided a breakdown of total consumer expenditures into various components such as food, tobacco, recreation, clothing, automobile, and other transportation expenditure. These data were used to allocate excises which fell into these various categories. The remainder of the excises were allocated on the basis of total consumer expenditure. The result of this process was that some 24 percent, or 1.5 billion dollars of the total of 6.2 billions of excise taxes, were allocated to the income groups above the $5,000 level. These taxes provided the most regressive element in the tax structure.

Another in the family of indirect taxes, the import duty, was also allocated on the basis of total consumer expenditure. The estate and gift taxes, in view of the high exemptions

involved, were allocated in their entirety to the upper income groups. The addition of these taxes to those already mentioned resulted in a pattern of taxes representing the 1945 federal tax structure. Under the assumption that all corporate taxes are borne by the stockholders of the corporation, some 21 billions of the total of 38.5 billion dollars of taxes allocated were placed upon the upper income groups—$5,000 and above. This represented almost 56 percent of all taxes. Under the alternative assumption that one-third of corporate taxes were shifted forward to the consumers, some 19 billion dollars of taxes, or 50 percent of the total, were allocated to the upper income brackets.

In order to analyze the transfer proplem, it is necessary not only to construct a federal tax structure but also a public debt structure which will show the ownership of and interest receipts flowing from those securities issued by the federal government in the creation of the public debt. An allocation of these interest returns among money income groups was made so that this distribution could be related to the payment of taxes by the same groups. In this way the significance of the transfer problem may be examined.

The transfer analysis is concerned only with the flow of money income into the Treasury from the tax system and then the flow of funds from the Treasury for the payment of interest on governmental obligations. The cash income and outgo attributable to the debt is then the desired amount for purposes of this analysis. On this basis certain interest payments appearing in budgetary figures for 1945 were excluded, such as interest payments to various trust accounts (paper transactions), interest accruing but not paid on all discount bonds, and interest payments by the Treasury to partially-owned government corporations, since they are non-cash budget expenditures. The total of budgetary interest expenditures of 4.1 billion dollars was thus reduced some .9 billions to 3.2 billion dollars. This amount was taken as the starting point in the construction of the public debt structure.

In order to derive a distribution pattern of interest receipts for the various money income groups, it was first necessary to determine the allocation of interest receipts by main investor groups such as individuals, corporations, state and local governments, insurance companies, and the banking system. Data showing directly the interest receipts of these various classifications were not available, however, in all cases. Where it was impossible to obtain data showing the interest receipts from government securities for the calendar year, 1945, it was necessary to determine the distribution of the debt itself and the rate of interest received by each investor group and then estimate the actual flow of interest payments by this indirect procedure.

In the case of commercial banks, Federal Reserve Banks, and mutual savings banks it was possible to obtain the interest receipts directly; and the earnings from this source in 1945 were respectively 1.2 billion dollars, 140 million dollars, and 212 million dollars. In the case of insurance companies, no data were available directly on their earnings from federal securities; so it was necessary to estimate the rate of earnings from the Treasury survey of ownership published monthly in the *Treasury Bulletin*. The estimated rate of earnings for 1945 was 2.32 percent on average holdings of 21.7 billions of securities, and thus the estimated interest receipts for 1945 were 503 million dollars. Similar use was made of the Treasury survey of ownership of securities together with data showing sale of securities in the eight War Loan drives (also published in the *Treasury Bulletin*) in order to estimate the interest received by corporations and other associations, state and local governments, and individuals. The estimated amounts received by these groups were respectively 429 millions, 97 millions, and 699 millions.

In order to complete the construction of the public debt pattern existing in 1945, the amount of interest receipts obtained by the various investor groups had to be allocated to the various money income groups, so that some comparability

with the federal tax structure could be obtained. The cash interest payments of the Treasury become a part of the transfer problem in three different ways: (1) Some of these payments flow directly to individuals who are holders of various issues of government securities; (2) A large amount flows to various institutions such as the banks, corporations, and insurance companies from which the interest is shifted in turn to the individuals in the several income classes; (3) A small part of the flow of interest payments goes to institutions such as the Federal Reserve Banks or to foreigners where a part of the receipts probably do not get back into the income stream in the same time period but are instead a leakage from this stream and deflationary in their effect. Another part of the cash interest payments was not considered in the transfer analysis because of the inability to allocate certain amounts among money income groups. Thus a part of the interest receipts of the Federal Reserve Banks and all of such receipts by state and local governments were not allocated. The size of the amount involved in the transfer process was reduced by this amount.

As in the case of taxation, there is a problem of shifting and incidence in connection with interest receipts also. One of the most difficult investor groups to consider in this respect was the commercial bank classification. The assumptions made here resulted in a multiple allocation of interest receipts among the time depositors, demand depositors, and stockholders of the banks. The allocation to time depositors was made on the basis of the interest payments made to holders of savings accounts. The allocation to demand depositors was made on the basis of the receipt of a negative form of income, in that such depositors received services to a value in excess of the service charges levied upon them.

The extent of the benefits received by the demand depositors was based upon estimates of imputed interest received by various depositor groups made by the National Income Division of the United States Department of Commerce and

upon an analysis of the expenses of commercial banks. The allocation to stockholders was based upon the amount of net profits earned by the banks. The participation of the stockholders of the banks in the interest receipts from government securities included both that part of net profits paid to them in the form of dividends and also the amounts transferred to surplus. The inclusion of the latter amount as part of the allocation to stockholders probably acted to minimize the deflationary effects of the transfer among income groups occasioned by bank-holdings of government securities. The estimated distribution of all interest receipts of the commercial banks resulted in placing some 680 million dollars, or 68 percent of total bank interest receipts from government securities in the hands of the upper income classes.

The interest receipts of the mutual savings banks were allocated to owners and depositors on the basis of the holding of saving accounts by money income classes. The interest receipts of life insurance companies were allocated among policyholders and beneficiaries on the basis of the accumulation or saving features of the life insurance contract. The receipts of fire, marine, and casualty companies were allocated along with the receipts of corporations and other associations on the basis of the distribution of dividends among money income groups in the same manner as corporate taxes were allocated to stockholders.

The individual classification was broken down into three categories—trust funds, personal holdings, and unincorporated businesses—for purposes of allocating interest receipts among money income groups. The result of this allocation was to place 57 percent of total interest receipts attributed to the individual classification into the hands of the upper income groups.

The final result of the allocation of interest receipts by money income groups was a public debt structure which was comparable with the federal tax structure. This estimated distribution indicated that almost 59 percent of all interest

receipts went to the upper income groups. The distribution of interest receipts and the distribution of taxes under the assumption that one-third of total corporate taxes is shifted to consumers are shown in the following table.

Redistribution of Income Flow Attributable to the Pattern of Tax[a] and Debt Structure in 1945 (Dollar Amounts in Thousands)

Money Income Group	Distribution of Taxes		Distribution of Int. Receipts		Redistribution of Income
	Pct.	Dollars	Pct.	Dollars	
Under 1	2.4	67,680	2.4	68,830	1,150[b]
1-2	9.1	256,620	6.5	185,180	71,440[c]
2-3	15.5	437,100	11.5	323,970	113,130[c]
3-4	13.9	391,980	11.8	332,020	59,960[c]
4-5	8.9	250,980	9.1	255,210	4,230[b]
Over 5	50.2	1,415,640	58.7	1,654,790	239,150[b]
	100.0	2,820,000	100.0	2,820,000	

[a]The tax structure used in this table is based on the assumption that one-third of corporate taxes are shifted to consumers.

[b]Gain

[c]Loss

A comparison of the 1945 federal tax and public debt structures reveals that the progressivity of these two structures is much the same. This is even more the case under the assumption that all corporate taxes are borne by the stockholders of the corporation. The size of the transfers of income due to different progressivities of the tax and debt structures, according to this analysis, was not large in 1945. The final column of the table shows the gain or loss of each income class as a result

of the transfer process. The redistributive effects of the debt were such that only 239 million dollars were shown as transferred from the low income to the high income groups in 1945. Under the assumption that stockholders bear all corporate taxes, the amount of transfer was only some 87 millions of income. The transfer shown here refers only to one particular year and only to that taking place due to a given tax and debt structure. The redistributive effects of the price system operating in the private sector of the economy are not considered.

The effect of the redistribution (due to the public debt) that did occur in 1945 upon the flow of income in that year depended not only upon the size of the transfer but also upon the marginal propensities to consume that were involved in the transfer process. The use of 1944 Bureau of Labor Statistics data reveals that the marginal propensity to consume for the upper income classes was very low in that year, while as usual this value for the lower income groups remained high. If this pattern were applicable to 1945, the transfer of 239 million dollars from the low income groups to the high income brackets served to reduce total spending by some 125 million dollars. In addition to this amount another deflationary factor must be considered. Some 100 millions of interest receipts flowing to the Federal Reserve Banks and to foreigners were considered in their entirety as leakages, and the deflationary effect on income flow must be increased by this amount. A reduction of total spending by some 225 millions, compared with the size of the national income, the size of the debt, and total interest payments involved, reflects a relatively small transfer; and in this particular year the public debt as a redistributive or deflationary force upon the income flow of the economy did not appear to be of great importance from the viewpoint of this study.

The effects of a large public debt in other years, with different progressivities of the tax and debt structure and with different propensities to consume involved, could possibly be

much different. Knowledge of the size of the transfer of money incomes and of its effect upon national income is of importance in the determination of fiscal policy. This analysis seeks to provide this knowledge for a given public debt in a specific year, but a series of such studies over a period of years would serve even more to facilitate the formation of such policy.

VITA

Donald Calvin Miller was born in Geneseo, Illinois, on March 31, 1920. His elementary and secondary education was obtained in Geneseo schools, from which he was graduated in 1938. He attended the University of Illinois for the next four years on a county scholarship and received the A. B. degree with Highest Honors in Economics in 1942. He attended the University of Illinois on a Graduate School scholarship and received the A. M. degree in 1943. He served as an officer in the United States Army until October, 1946, at which time he returned to the University of Illinois to continue graduate work in economics under Graduate School fellowships. He is a member of Phi Beta Kappa, Phi Kappa Phi, Beta Gamma Sigma, Phi Eta Sigma, Order of Artus, and Beta Theta Pi social fraternity.